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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.
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09/738,372 12/15/00 JIANG

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M	IMRAA.013DV1
EXAMINER	

ARTZAHN, J	PAPER NUMBER
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DATE MAILED: 2001

05/22/01

Please find below and/or attached an Office communication concerning this application or proceeding.

Commissioner of Patents and Trademarks

Office Action Summary

Applicant(s)

09/738,372

Applicant(s)

JIANG ET AL.

Examiner

Jeffrey N Zahn

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136 (a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 12/15/00
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 22-28, 33 and 34 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 22-28, 33 and 34 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claims _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are objected to by the Examiner.
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. § 119

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e).

Attachment(s)

- 15) ☒ Notice of References Cited (PTO-892)
- 16) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 17) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 3
- 18) ☐ Interview Summary (PTO-413) Paper No(s) _____
- 19) ☐ Notice of Informal Patent Application (PTO-152)
- 20) ☐ Other: _____

DETAILED ACTION

Claim Rejections - 35 USC § 112

1. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

2. Claims 22-34 are rejected under 35 U.S.C. 112, second paragraph, as being incomplete for omitting essential steps, such omission amounting to a gap between the steps. See MPEP § 2172.01. The omitted steps are: (1) pumping a gain medium within a resonant Fabry-Perot laser cavity; (2) generating Q-switched mode-locked laser pulses using a saturable absorber located within said resonant Fabry-Perot optical cavity; (3) absorbing said Q-switched laser pulses by insertion of a Two-Photon Absorber within the said resonant Fabry-Perot optical cavity; and (4) outputting a cw mode-locked laser pulse from the said resonant Fabry-Perot optical cavity.

These steps are essential because they are (1) necessary to generate a cw mode-locked laser pulses as disclosed by the applicant and (2) these steps are not obvious to someone of skill in the art of lasers, as related to claim interpretation, without reference to the specification.

3. Claim 27 recites the limitation "said light" in line 30. There is insufficient antecedent basis for this limitation in the claim.

Claim Rejections - 35 USC § 103

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and

the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. Claims 22-28, and 33-34 are rejected under 35 U.S.C. 103(a) as being unpatentable over Jacobovitz-Veselka et al. in view of Hordvik.

Regarding Claims 22-26, 28, and 33-34, Jacobovitz-Veselka et al. discloses a method of generating mode-locked Q-switched laser pulses (col. 2, lines 55-64) that includes pumping a gain medium (12) disposed within a laser cavity (11 & 15). In addition, Jacobovitz-Veselka et al. discloses a method of absorbing optical radiation within a Fabry-Perot structure (col. 5, lines 11-27) that includes a saturable absorber (14). Jacobovitz-Veselka et al. lacks the step of suppressing Q-switching.

Hordvick teaches the use of Two-Photon Absorption to suppress Q-switching as a means to enable pulse stretching (Abstract; see also col. 1, 2nd para. of Introduction). It would have been obvious at the time of the invention to someone of ordinary skill in the art of lasers to modify Jacobovitz-Veselka et al. to include absorbing Q-switched laser pulses using a Two-Photon Absorber to lengthen the pulses. It is well known in the art of lasers that increasing the pulse length of a laser pulse is valuable for many laser applications that involve increased peak power.

Regarding Claim 27, where the general conditions of a claim are disclosed in the prior art, it is not inventive to discover the optimum or workable ranges by routine experimentation. In re Aller, 220 F.2d 454, 456 (CCPA 1955). Here, the applicant has specified a step of resonating light within the Fabry-Perot structure; the prior art discloses, i.e. Jacobovitz-Veselka et al. that includes a Fabry-Perot structure. In

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addition, it is inherent that this structure must resonate at a particular frequency that depends on the length of the cavity.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jeffrey N Zahn whose telephone number is 703-305-3443. The examiner can normally be reached on M-F: 8:30-5:00 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Teresa M Arroyo can be reached on 703-308-4782. The fax phone numbers for the organization where this application or proceeding is assigned are 703-308-7722 for regular communications and 703-308-7722 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-308-0956.



Jeffrey Zahn
May 18, 2001



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